Comparison of Beef Cattle Management Systems: Pasture versus Drylot Year 2 (2010-2011)

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Introduction

Land is an expensive and limited resource that must be efficiently managed for sustainability. North Dakota is traditionally a cow-calf production state, with cow-calf pairs grazing on pasture. Since 1972, the Carrington Research Extension Center has been raising beef cattle in a drylot management system, maintaining a breeding cow herd in a confined drylot or feedlot pens during normal grazing times. This system was implemented as a research tool and in the process we observed this system can produce more beef per acre of cropland, utilizing forages, crop residues, co-products and off-quality grain.

To compare the efficiency and economics of each production system, mature crossbred Red Angus beef cows at the Carrington Research Extension Center were allotted randomly to two management protocols: pasture and drylot. The protocol for each treatment is based on the best management practices for each respective environment.

Variables measured include cow efficiency measured in breeding success and pounds of calf at weaning, steer growth and carcass traits, as well as replacement heifer conception rate. This trial will be continued for six years to allow for statistical confidence of recorded observations and economic trends of inputs required for production. This paper is a progress report of the first and second years' observations. Costs and returns associated with each system will be reported in future publications.

Red Angus cow-calf pairs (n = ~80) were allotted after calving in year one to drylot or pasture treatments for the summer grazing period and remain in the same treatments throughout the study. Average calf birth weight for all pasture and drylot calves was 96.15 pounds and 92.15 pounds, respectively, with birth dates of 30 March 2010 for both treatments. Drylot cows were fed a totally-mixed ration once daily formulated to the recommendations of NRC (1996) primarily consisting of corn silage, wheat straw, condensed distillers grains with solubles and barley hulls. Mixed grass hay/wheat straw was offered free choice along with free access to fenceline waterers. On 14 May 2010, cow-calf pairs assigned to the pasture management treatment were transported to 256 acres of mixed, native-grass pasture. Pairs had free access to water provided by a stream that traversed the pasture. Drylot management pairs were confined in two large drylot pens. After weaning, drylot cows grazed barley residue until snow cover to reduce labor and utilize available forage. Pasture cows remained in their season-long native pasture until winter forced their return to wintering pens on December 1.

Prior to weaning, calves in both treatments were offered creep feed formulated with sunflower meal pellets, corn, rolled field peas and wheat middlings and a commercial mineral supplement. Drylot calves (n = 39) were weaned at approximately 184 days of age, whereas the pasture calves (n = 40) were weaned at 219 days of age in accordance with common producer best-management procedures.

Steers (n = 40) were comingled at the Carrington Research Extension Center's feedlot pens and offered a totally-mixed ration once daily formulated to meet or exceed NRC (1996). A receiving ration of 56 Mcal/lb was fed for 56 days and a finishing ration of 65 Mcal/lb offered to appetite until harvest. Steers were managed conventionally with ionophores (300 mg/head/day Rumensin®) and implanted with terminal combination estradiol/trenbolone acetate growth implant. Steers were harvested when visual appraisal by trained livestock technicians estimated that 60 percent of the steers had reached a quality grade of Choice or better. During the 159-day post-weaning feeding period, drylot steers gained an average of 3.71 pounds per day and 3.55 lbs per day from pasture. Steers had hot carcass

weights of 827.25 pounds for drylot versus 826.40 pounds for pasture and marbling scores of 494.0 drylot (high choice) and 440.50 (choice) for pasture management steers.

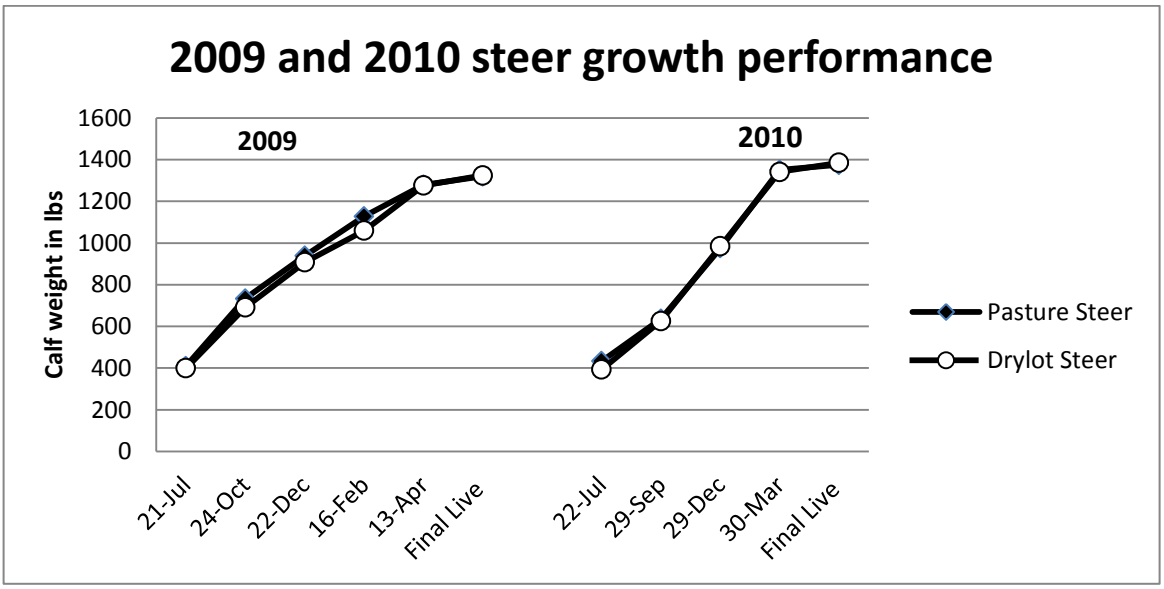
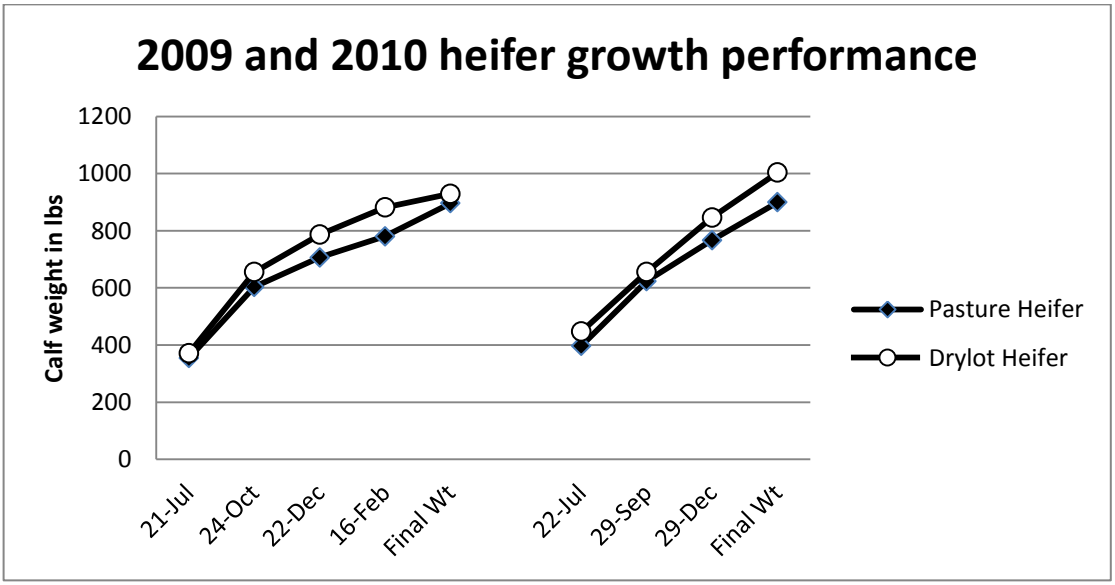


Figure 1. Steer performance in pasture versus drylot study.

Weaned heifers were managed similarly in drylot pens regardless of previous treatment. Heifers were observed for 147 days post weaning with average daily gain of 1.77 lbs vs. 1.84 lbs recorded, respectively, for drylot and pasture treatments.

Heifers selected for replacements will be assigned to the originating management treatment for the duration of the trial.



While some minor differences have been observed between the two production systems, it is apparent from the first two years of data that the drylot system is a viable method of raising beef cattle when pasture is not available, land is limited, and crops products for feed can be obtained. The cost of the ration and the management ability of the herdsmen are considered the critical items for drylot production along with early identification and prompt treatment of any illness.